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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,857	06/07/2005	Assaf Shappir		7211

7590 01/24/2008
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EXAMINER

NGUYEN, DANG T

ART UNIT	PAPER NUMBER
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2824

MAIL DATE	DELIVERY MODE
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01/24/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/537,857

Applicant(s)

SHAPPIR ET AL.

Examiner

Dang T. Nguyen

Art Unit

2824

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2007 of Notice of Appeal.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: Search history.

Response to Appeal Brief

1. In view of the Notice of Appeal filed on 12/10/2007, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

2. Applicant's arguments with respect to claims 1, 9 and 19 have been considered but are moot in view of the new ground(s) of rejection. The previous rejection has been withdrawn.

3. Claims 1 – 19 are pending on this application. Claims 1, 9 and 19 are independent claims.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 4, 9 – 14, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Pio U.S. Patent No. US 6,643,184 B2 – filed: Jan. 24, 2002.

Regarding independent claim 1, Fig. 2b of Pio discloses a method of erasing one or more non-volatile memory cells (Col. 1 lines 6 - 9) comprising: applying to the one or more NVM cells (Fig. 1b) an erase pulse having a substantially non-flat voltage profile (Col. 6 lines 44 - 48 disclosed the erase pulse has trapezoidal shape).

Regarding dependent claim 2, Pio discloses the method according to claim 1, wherein the voltage profile of the erase pulse is predefined (Col. 6 lines 44 - 48, for disclosing the erase pulse is predefined trapezoid shape varying from 3V to 8.5 V from time t1b to t2b).

Regarding to dependent claim 3, Pio discloses the method according to claim 2, wherein the erase pulse (Col. 6 lines 44 - 48) has a voltage profile selected from the group consisting of ramp-like, trapezoidal, exponential-growth –like, asymptote-like and stepped (Col. 6 lines 44 - 48).

Regarding dependent claim 4, Pio discloses the method according to claim 3, wherein the erase pulse (Col. 6 lines 44 - 48) is applied to each sub-set of the set of NVM cells (Fig. 1b) in a staggered sequence (Col. 6 lines 62 - 64).

Regarding independent claim 9, Fig. 2 of Pio discloses a circuit for erasing (Col. 1 lines 1 - 6) one or non-volatile memory cells (Fig. 1b) comprising, an erase pulse source to produce an erase pulse (pulse (Col. 6 lines 44 - 48)) having a substantially

non-flat voltage profile (Col. 6 lines 44 - 48 disclosed the erase pulse has trapezoidal shape).

Regarding dependent claim 10, Pio further discloses wherein said erase pulse source comprises a charge-pump (Col. 3 lines 38 - 43).

Regarding dependent claim 11, Pio discloses wherein the erase pulse (22) has a voltage profile selected from the group consisting of ramp-like, trapezoidal, exponential-growth -like, asymptote-like and stepped (Col. 6 lines 44 - 48, for disclosing the erase pulse has trapezoidal shape).

Regarding dependent claim 12, Fig. 3 of Pio further discloses a cell select circuit (115, 150)) adapted to select to which cells of a set of NVM cells (105) the erase pulse is applied (Fig. 2b).

Regarding dependent claim 13, Pio discloses wherein said cell select circuit (fig. 1b) is adapted to apply the erase pulse to each sub-set (Col. 6 lines 44 - 48) of the set of NVM cells (Fig. 1b) in a staggered sequence (Col. 6 lines 62 - 64).

Regarding dependent claim 14, Fig. 2b of Pio discloses a circuit according to claim 9, further discloses comprising a sensor (this is an inherent device to Fig. 2b of Pio. because a sensor device must be provided in order to disclose the erase voltage characteristic in Fig. 2b) to sense a characteristic of the erase pulse (Fig. 2b) as it is being applied to the one or more NVM cells (Fig. 1b).

Regarding independent claim 19, Fig. 1a of Pio discloses a system for erasing (Col. 1 lines 1 - 6) one or non-volatile memory (105) cells comprising: A NVM array (fig. 1b), and an erase pulse source to produce an erase pulse (Col. 6 lines 44 - 48) having a

substantially non-flat voltage profile (Col. 6 lines 44 - 48 disclosed the erase pulse has trapezoidal shape).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 – 8, and 15 - 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pio as applied to claims 1, 9 and 14 above, and in view of Chindalore et al., U.S. patent No. 6,839,280 B1 – filed: Jun. 27, 2003.

Regarding dependent claims 5 and 16, Pio as applied to claims 1 and 9 above does not explicitly disclose wherein the voltage profile (Fig. 2b) of the erase pulse (Col. 6 lines 44 - 48) is dynamically adjusted based on the feedback.

Fig. 4 of Chindalore et al. disclosed the voltage profile (Vcell) of the erase pulse is dynamically adjusted based on feedback (Col. 5 lines 1 – 7).

Pio and Chindalore et al. are common subject matter for erasing non-volatile memory cell. Therefore; it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the concept taught by the voltage profile of Chindalore into the voltage profile of Pio for purpose of providing adjustment

for erase voltage to provide proper erase voltage for the memory cell (Chindalore et al.'s Col. 5 lines 8 – 11).

Regarding dependent claim 6, Chindalore et al. as applied to claims 5 and above, further disclose wherein the feedback comes from a sensor from the group consisting of a current sensor, a voltage sensor, a current derivative sensor, and a voltage derivative sensor (48, fig. 4 discloses a voltage derive sensor for IREF feedback to adjust the voltage programmed and erased voltage of Vcell; Col. 5 lines 1 – 7).

Regarding depending claim 7, Chindalore et al. as applied to claim 6 above discloses wherein the voltage of the erase pulse is adjusted in an inversion relation to the current measure by the current sensor (Col. 5 lines 1 – 7 of Chindalore et al. *disclose current feedback sensor device 48 having voltage adjustment, which inversed relation with feedback current decreasing reference current, resulting cell voltage increases over time as the memory is erased*).

Regarding dependent claim 8, Chindalore et al. as applied to claim 6 above discloses wherein the voltage of the erase pulse is adjusted at a rate correlated to a signal produced by the current derivative sensor (Col. 5 lines 1 – 7 of Chindalore et al. *disclose current feedback sensor device 48 having voltage adjustment correlated to increase or decrease rate of current feedback I REF*).

Regarding dependent claim 15, the claim incorporated the same subject matter as of claim 6, and rejected along the same rationale.

Regarding dependent claim 17, the claim incorporated the same subject matter as of 7 above, and rejected along the same rationale.

Regarding dependent claim 18, the claim incorporated the same subject matter as of claim 8 above, and rejected along the same rationale.

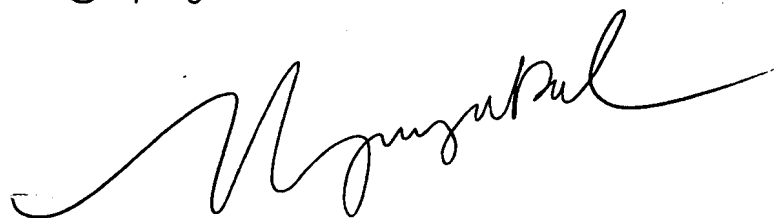
Contact Information

6. Any inquiry concerning this communication from the examiner should be directed to Dang Nguyen, who can be reached by telephone at (571) 272-1955. Normal contact times are M-F, 8:00 AM - 4:30 PM.

Upon an unsuccessful attempt to contact the examiner, the examiner's supervisor, Richard Elms, may be reached at (571) 272-1869.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is (703) 305-3900. The faxed phone number for organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the Status of an application may be obtained from the patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or EBC@uspto.gov.



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1/21/2008

Dang Nguyen

Patent examiner

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